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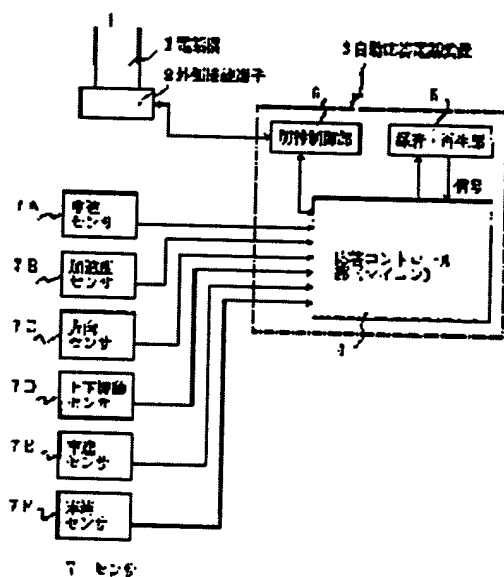
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(54) AUTOMATIC REPLY TELEPHONE SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To improve the safety of driving by allowing a telephone system to make automatic reply, while a driver conducts driving operations such as control of the steering wheel or acceleration/deceleration.

SOLUTION: This system is provided with an external connection terminal 2, to which a cellular telephone set or portable telephone set 1 is connected, a reply control section 4 that executes automatic reply processing, a changeover control section 6 that sends/receives a signal between the telephone set 1 and the reply control section 4, a recording/reproducing section 5 that records/ reproduces a message in the case of automatic reply, and plural sensors 7 that sense a drive state of an automobile. There are a vehicle velocity sensor 7A, an acceleration sensor 7B, a direction sensor 7C, a vertical vibration sensor 7D, an oncoming vehicle sensor 7E, and a visual



field analysis sensor 7F as the plural sensors. The reply control section 4 drives the recording/reproducing section 5 to make automatic reply processing, when the section 4

receives a sensing output of a sensor or more among the plural the sensors 7, denoting it that the vehicle in a driving condition is detected for which a speech by the driver is not proper.

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CLAIMS

[Claim(s)]

[Claim 1] The external end-connection child who can connect a car telephone machine and a portable telephone, and the response control section which performs automatic-answering processing, The change control section which delivers and receives a signal between the telephone connected to the aforementioned external end-connection child, and the aforementioned response control section, It has recording / regeneration section which performs recording and regeneration of a message, and two or more sensors which detect the run state of an automobile at the time of automatic answering. the aforementioned response control section Automatic-answering telephone equipment

characterized by constituting so that the aforementioned recording / regeneration section may be driven and automatic-answering processing may be performed, when the run state of the automobile for which a telephone call of an operator is not appropriate is detected from one or more sensors among the outputs from two or more aforementioned sensors.

[Claim 2] The vehicle speed sensor by which two or more sensors detect the vehicle speed of an automobile, the acceleration sensor which detects the acceleration and deceleration of an automobile, The orientation sensor which detects the advance orientation of an automobile, the vertical vibration detection sensor which detects vertical movement of the automobile car body, At least two or more pieces, the oncoming car detection sensor which detects the existence of an oncoming car, and the field-of-view analysis sensor which detects the field-of-view quality ahead of an automobile, are prepared. the aforementioned response control section Automatic-answering telephone equipment according to claim 1 constituted so that the aforementioned automatic answering may be performed, when the output of these sensors exceeds the fixed value set up beforehand.

[Claim 3] It is the automatic-answering telephone equipment according to claim 2 which two or more messages for explaining the automobilism status corresponding to each aforementioned sensor are recorded on the aforementioned record / regeneration section, and the aforementioned response control section chooses the message corresponding to the sensor exceeding the value of the aforementioned regularity, and carries out automatic answering.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the automatic-answering telephone equipment equipped with the automatic-answering function for preventing beforehand the accident by which use of the telephone in the inside of an automobilism is especially considered as a cause about the car telephone machine and portable telephone which are used by carrying in an automobile.

[0002]

[Description of the Prior Art] While the run state of an automobile is detected and the automobile is running above a predetermined speed in order to prevent the accident according an automobile to use of a telephone on stream in recent years, a telephone

carries out automatic answering to a call, and the automatic-answering telephone equipment which notifies that an addressee side does not appear in a telephone at the call other party is proposed. Drawing 3 is a block block diagram showing one of them. This automatic-answering telephone equipment consists of the car telephone radio machine 11, the telephone 12, a vehicle speed sensor 13, the response control section 14, and the recording / regeneration section 15, and outputs the vehicle speed which had always detected the vehicle speed of an automobile and detected it to the response control section 14 by the vehicle speed sensor 13. Moreover, recording / regeneration section 15 records the message of the other party which answered by having reproduced the message currently recorded beforehand, or received.

[0003] With this automatic-answering telephone equipment, when a radiotelephone 11 detects a call, the response control section 14 checks the vehicle speed from the vehicle speed sensor 13, and it judges whether this vehicle speed is more than a constant value. At the time under of a constant value, an automobile is a low-speed run, and it judges that there is no safe upper problem even if it talks over the telephone, and it presupposes that automatic answering is not needed in this case. For this reason, a call of a telephone 12 is continued and the telephone call by crew (operator) is enabled. On the other hand, when the vehicle speed is more than a constant value, in order that the response control section 14 may detect the hook status of a telephone 12 and an operator may not appear from the field of a safety operation in a telephone, when the hook ON state from a telephone 12 continues fixed time, a hook off signal is inputted into the automobile radio machine 11, this is made into a talk state, recording / regeneration section 15 is driven, and automatic-answering processing is performed.

[0004]

[Problem(s) to be Solved by the Invention] With such conventional automatic-answering telephone equipment, since automatic-answering processing is performed only by only being based on the travel speed of an automobile, automatic answering is not performed in the operation status which is below a fixed speed and which does not appear in a safe upper telephone even when it is on stream, but there is a problem that connection becomes impossible by telephone. For example, when handle operation is busy, while passing through the concavo-convex road-surface passage to the **** run at the time of sudden handle operation, when an oncoming car comes a narrow path during passing, even if it is a low-speed run, operation while talking cannot answer a telephone in this case preferably on safe, but telephone connection becomes impossible. For this reason, the problem that the effect that the attentiveness variance by the conversation at the time of driving of a vehicle which automatic-answering telephone equipment makes the purpose prevents the accident of a cause effectively can seldom expect has arisen. Moreover, the conventional automatic-answering telephone equipment is aimed at the car telephone with which the automobile is equipped, in the case of the operator to whom the spread of in recent years possesses the remarkable portable telephone, it cannot use this automatic-answering telephone equipment, but there is a problem that it is not desirable in respect of a safety operation in it.

[0005] The purpose of this invention is to offer the automatic-answering telephone equipment which can prevent accident telephone in use still certainly. Moreover, this invention is to offer the automatic-answering telephone equipment which made possible automatic answering in cellular phones other than a car telephone.

[0006]

[Means for Solving the Problem] With the external end-connection child to whom the automatic-answering telephone equipment of this invention can connect a car telephone machine and a portable telephone. The change control section which delivers and receives a signal between the response control section which performs automatic-answering processing, and the telephone connected to the aforementioned external end-connection child and the aforementioned response control section, It has recording / regeneration section which performs recording and regeneration of a message, and two or more sensors which detect the run state of an automobile at the time of automatic answering. the aforementioned response control section When the run state of the automobile for which a telephone call of an operator is not appropriate is detected from one or more sensors among the outputs from two or more aforementioned sensors, it constitutes so that the aforementioned recording / regeneration section may be driven and automatic-answering processing may be performed.

[0007] The vehicle speed sensor by which two or more sensors detect the vehicle speed of an automobile here, the acceleration sensor which detects the acceleration and deceleration of an automobile, The orientation sensor which detects the advance orientation of an automobile, the vertical vibration detection sensor which detects vertical movement of the automobile car body, At least two or more of a field-of-view analysis sensor that detect the field-of-view quality ahead of an oncoming car detection sensor and an automobile which detects the existence of an oncoming car are prepared, and when the output of these sensors exceeds the fixed value set up beforehand, the aforementioned response control section is constituted so that the aforementioned automatic answering may be performed. Moreover, two or more messages for explaining the automobilism status corresponding to each aforementioned sensor are recorded on the aforementioned record / regeneration section, and the aforementioned response control section is taken as the configuration which chooses and carries out automatic answering of the message corresponding to the sensor exceeding the value of the aforementioned regularity.

[0008]

[Embodiments of the Invention] Next, the operation gestalt of this invention is explained with reference to a drawing. Drawing 1 is a block block diagram of the operation gestalt of this invention, and the car telephone machine and the portable telephone 1 are considered as the configuration connected to the automatic-answering telephone equipment 3 by the external end-connection child 2. For example, the application is attained irrespective of the modality of telephone by making connection with the external end-connection child 2 using the interface prepared in the car telephone machine or the portable telephone. The response control section 4 constituted from a microcomputer by the aforementioned automatic-answering telephone equipment 3, While two or more messages of a beforehand different modality are recorded, or the other party's message is recorded and recording / regeneration section 5 in which these regeneration is possible, and the signal from the aforementioned telephone 1 are told to the aforementioned response control section 4 It has the change control section 6 which performs **** of a signal, such as telling the message reproduced in the aforementioned recording / regeneration section 5 through this response control section 4 to a telephone 1 through the aforementioned external end-connection child 2. Furthermore, the run state of an automobile is detected and the various sensors 7 which output the detecting signal to the

forementioned response control section 4 are formed.

[0009] The aforementioned sensor 7 consists of six kinds of sensors here. That is, it is speed sensor 7A, acceleration-sensor 7B, orientation sensor 7C, vertical vibration detection sensor 7D, oncoming car detection sensor 7E, and field-of-view analysis sensor 7F. Vehicle speed sensor 7A can use the sensor used from the former, for example, detects the vehicle speed of an automobile from the rotational speed of the axle of an automobile. The same is said of acceleration-sensor 7B, and the positive side acceleration and negative side acceleration (deceleration) of an automobile are detected from vehicle speed change of an automobile. This acceleration can be obtained also by calculating vehicle speed change of an automobile from the output of the aforementioned vehicle speed sensor 7A, and an acceleration sensor can be omitted in this case. Moreover, orientation sensor 7C is prepared in the handle or power steering system of an automobile, and detects the advance orientation of an automobile. Vertical vibration detection sensor 7D is prepared in the suspension of an automobile etc., and detects the amount by which the vertical move of the car body of an automobile is carried out. Moreover, oncoming car detection sensor 7E and field-of-view analysis sensor 7F inject infrared light from an automobile, are detecting the reflected light and detect the oncoming car and obstruction which exist ahead of an automobile. An oncoming car and an obstruction are distinguishable with the difference in the orientation of the front of an automobile. And the detection output of these sensors is inputted into the response control section 4, and the automobilism status is synthetically judged by performing predetermined processing in this response control section 4.

[0010] An operation of this automatic-answering telephone equipment is explained with reference to the flow chart of drawing 2. If the ignition key of an automobile will be turned on and an engine will be in an operating condition, the response control section 4 will collect the detection outputs of each sensor 7. And it sees whether it is over 65km/h [whose vehicle speed is high-speed run states]/H from the value of vehicle speed sensor 7A (step S1), and a flag "0" is built at the time of below a flag "1" and the aforementioned value at the time beyond this value. next -- if it sees whether it is over the domain of **3G which are in the acceleration status which has stepped on the accelerator, or the slowdown status that the brakes operation is performed (step S2) and it has exceeded from the value of acceleration-sensor 7B -- a flag "11" -- a flag "10" is built if it has not exceeded next -- if the status that it has bent 30 degrees or more is seen whether continue or continue repeatedly from the status of the rectilinear propagation which is in the status that steering operation by the handle is performed (step S3) and this continues from the value of orientation sensor 7C -- a flag "21" -- a flag "20" is built if it does not continue next -- if the vertical vibration 3cm or more to which the road surface needs to grasp the handle firmly in the state of irregularity is seen whether continue 10 seconds or more (step S4) and it continues from the vertical vibration detection sensor 7 D value -- a flag "31" -- a flag "30" is built if it does not continue Next, it finds whether there is any oncoming car below by the 3m width of road from oncoming car detection sensor 7E (step S5), and in oncoming car owner **, a flag "40" is built, when nothing, a flag "41" and. Next, when light is seen whether arrive from F to 30m point of field-of-view analysis sensor 7 the front which is in the bad status of a field of view like [at the time of night or rainy weather] (step S6) and light does not arrive, a flag "51" is built, and a flag "50" is built when arriving.

[0011] and -- the response control section 4 -- the flag of all these sensors -- lower -- 1 figure -- seeing (step S7) -- at least one flag -- lower -- it controls to send an automatic-answering mode signal to the change control section 6, if "1" is in 1 figure, and to send the terminating signal of a telephone 1 only to the direct response control section 4 (step S8) Next, while it finds whether there is any terminating signal (step S9) and a circuit is connected in the response control section 4 in signal owner ** Under the flag of each aforementioned sensor 7, paying attention to the flag of "1", 1 figure chooses from recording / regeneration section 5 the message currently recorded corresponding to the flag (step S10), starts recording / regeneration section 5, and passes partner point ***** (step S11). for example, -- the case where it is judged that can judge performing handle operation at the angle of 30 degrees or more from orientation sensor 7C, and an oncoming car exists from oncoming car sensor 7E when there are "21" of a flag and "41" -- " -- since it has turned and the oncoming car is coming by the narrow width of road now, it cannot appear in a telephone -- if very well, please leave a message It becomes the message ".

[0012] Moreover, after fixed time progress, recording / regeneration section 5 is made to stop (step S12), and the automatic-answering mode of the response control section 4 is made off (step S13), and after judging whether the engine is yet working after that (step S14), it returns to the aforementioned step S1. In addition, when the message of the other party recorded by recording / regeneration section 5 becomes off [the automatic-answering mode], an operator can be told with sound and light, and an operator can operate and hear recording / regeneration section 5 from the response control section 4.

[0013] Therefore, in the case of this operation gestalt, automatic answering is performed in the time of a poor field of view etc. at the time of handle operation at the time of acceleration and deceleration at the time of the high-speed run with the need that an operation vehicle concentrates on an automobilism. for this reason -- an operator is not at a telephone -- ** -- it is enabled to recognize that telephone connection with the other party is made, and the other party does not appear in the automobilism status and a telephone by transmission of the message in that case This enables it to secure the safety operation of an automobile.

[0014] Moreover, with the aforementioned operation gestalt, if it is the telephone connected to an external end-connection child, since automatic answering is possible, it will not be restricted to the car telephone machine with which an automobile is equipped fixed, and automatic answering in a portable telephone will also become possible.

[0015] It is enabled to constitute the automatic-answering telephone equipment which is the sensor in this invention not being restricted to the above mentioned modality and above mentioned number of sensors, and equipping a proper sensor, and can realize automatic answering under the arbitrary operation statuses here.

[0016]

[Effect of the Invention] When this invention is equipped with two or more sensors for detecting the run state of an automobile as explained above, and there is arrival of the mail, the response control section Since it constitutes so that recording / regeneration section may be driven and automatic-answering processing may be performed when the run state of the automobile for which a telephone call of an operator is not appropriate is detected from one or more sensors among the outputs from two or more aforementioned sensors It must be necessary to stop being at a telephone, and an automobile can be

concentrated on operation of a vehicle, when conversation on stream causes trouble to operation, it is safe and operation with allowance can be performed. Moreover, by enabling connection with automatic-answering telephone equipment by the external end-connection child, it can be enabled to apply not only to a car telephone machine but to a portable telephone, while an automobile runs, it can correspond to all the telephones with arrival of the mail, and an operator's safety can be secured irrespective of the modality of telephone.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram of the 1 operation gestalt of the automatic-answering telephone equipment of this invention.

[Drawing 2] It is a flow chart for explaining an operation of the automatic-answering telephone equipment of drawing 1.

[Drawing 3] It is the block diagram of an example of the conventional automatic-answering telephone equipment.

- 1 Telephone
- 2 External End-Connection Child
- 3 Automatic-Answering Telephone Equipment
- 4 Response Control Section
- 5 Recording / Regeneration Section
- 6 Change Control Section
- 7 Sensor
 - 7A Vehicle speed sensor
 - 7B Acceleration sensor
 - 7C Orientation sensor
 - 7D Vertical vibration detection sensor
 - 7E Oncoming car sensor
 - 7F Field-of-view analysis sensor

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